

REMARKS

In response to the Office Action mailed December 6, 2004, Applicants amend their application and request reconsideration. No claims are added or cancelled so that claims 1-19 remain pending.

Claims 12 and 13 were objected to but not rejected. This comment is not understood since claims 12 and 13 are alternatively rejected as anticipated, as described below. In view of this ambiguity, the prior art rejection of claims 12 and 13 is traversed for the reasons stated below.

The invention concerns a heat transport device and numerous embodiments are described in the patent application. Among the common features of these embodiments is the presence of a container having a fluid channel. The container is sealed at first and second ends and, quite naturally, the container extends between those first and second ends. A fluid is contained within the fluid channel for transporting heat between the ends and between intermediate locations on the container. In some embodiments the container is linear. In other embodiments, the container is bent or serpentine. Regardless of the configuration of the container, all of the claimed apparatus includes at least one thermal receiving heat exchanger and at least one thermal radiating heat exchanger. The receiver receives heat from a heat generating source whereas the radiator radiates heat from the container, heat that may be supplied through the receiver.

An important feature is the relative location of the receiving heat exchanger and the radiating heat exchanger. Those two heat exchangers are located at different positions along the fluid channel between the first and second ends of the container. These two heat exchangers are arranged serially with respect to the fluid channel so that heat exchange can occur between the heat exchangers by means of the fluid contained within the fluid channel. That fluid may be a mixture of a gas and a liquid. As explained in the patent application, this arrangement of heat exchangers performing different functions, particularly where multiple radiating and heat receiving exchangers are present, causes the fluid within the fluid channel to oscillate with respect to position, achieving a desired heat transportation objective.

In this amendment each of the three pending independent claims is amended for clarity. In particular, the arrangement of the heat receiving and heat radiating heat exchangers with respect to the fluid channel and the container are explained more clearly. All three independent claims, claims 1, 18, and 19 are amended in the same way and with the same words. The amendments are clearly supported by the application as filed, as described in the preceding paragraph.

Claims 1-8, 10-13, and 15-17 were rejected as anticipated by Buckley (U.S. Patent 4,137,964). This rejection is respectfully traversed.

While it is understood how it may have been possible to interpret claim 1 in view of Buckley to construct a rejection for anticipation, it is no longer possible to take that position. Although the application of Buckley to the claims rejected was not explained at all in the Office Action, it is understood that the Examiner compared the two heat conducting plates 20 shown, for example, in Figure 2 of Buckley, to the heat radiating and heat receiving heat exchangers of claim 1. It is apparent that those two plates in Buckley are arranged directly opposite each other and extend the full length of the fluid channel 30. There is no arrangement in any depicted structure nor any described structure in Buckley of two heat exchangers, one radiating heat and one absorbing heat, serially along the channel 30. Therefore, there can be no anticipation of amended claim 1 or any of its dependent claims 2-8, 10-13, and 15-17 by Buckley.

Claims 9 and 14, claims that also depend from claim 1, were rejected as unpatentable over Buckley in view of Smith et al. (U.S. Patent 6,247,525, hereinafter Smith). This rejection is respectfully traversed.

It is apparent that the rejection of claims 9 and 14 depends for its propriety on the rejection for anticipation of claim 1 and claim 10. However, the rejection for anticipation of those claims cannot be maintained for the reasons already provided with regard to claim 1. Thus, the rejection of claims 9 and 14 fails upon the withdrawal of the rejection of claim 1.

Claims 18 and 19 were rejected as anticipated by Cao et al. (U.S. Patent 6,684,941, hereinafter Cao). This rejection is respectfully traversed.

As an initial matter, Cao does not appear to be prior art. The present patent application is a continuation-in-part of a U.S. patent application that has been abandoned and that claims priority from a Japanese patent application filed before the earliest effective date of Cao. Applicants reserve the right to rely upon their priority date, if necessary, to overcome the rejection of claims 18 and 19, although that reliance is not made in this response.

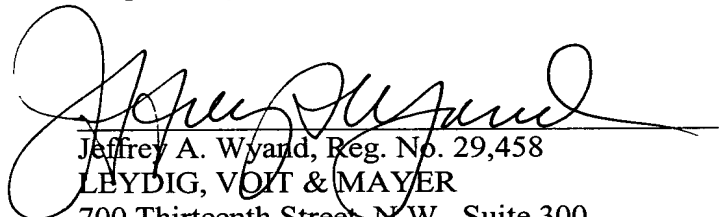
As previously stated, claims 18 and 19 include all of the limitations of independent claim 1 as amended. An important feature of the invention expressly described in those claims is that the container has opposed first and second ends. Further, those ends are sealed to prevent the intrusion of external air. By contrast, while the fluid channel in Cao may be sealed, it does not have two opposite ends. Rather, even as described in the Office Action, the fluid channel in Cao is continuous, i.e., described as a loop. Referring to Figures 1-3 of Cao, it is apparent that the closed loop is provided with a plunger activated by either of two solenoids to produce different directions of flow of a liquid within the loop. While it might be asserted that the plunger and solenoid arrangement for driving the fluid through the loop in Cao effectively provides two

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opposed ends to the fluid channel, not even Cao would support such an argument. Cao describes the existence of a gap 65 between the piston 45 and the sidewalls 32 of the reservoir. Thus when the piston moves back and forth, horizontally in Figures 2 and 3 of Cao, fluid can flow around the piston 45 through the gap 65, completing a loop. The point of this description is that, unlike the structures described in each of claims 18 and 19, Cao never describes a heat transport structure in which a fluid channel has two opposed ends, both of which are sealed against the intrusion of air. In fact, there is not even a single end in the fluid channel of the Cao heat transporting structuring. Because of these differences, it is impossible for Cao to anticipate either of claims 18 and 19.

Reconsideration and withdrawal of the rejections are earnestly solicited.

Respectfully submitted,



Jeffrey A. Wyand, Reg. No. 29,458
LEYDIG, VOIT & MAYER
700 Thirteenth Street, N.W., Suite 300
Washington, DC 20005-3960
(202) 737-6770 (telephone)
(202) 737-6776 (facsimile)

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